Japanese's extravagant consumption of water and how education can ameliorate the situation

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Abstracts

Last year, Japanese have spent 300 billion yen on mineral water. This gigantic expenditure of water reveals the unawareness of Japanese tap water safety and their low interest in global water issues.

Japanese invest vast amount of money into water industry by buying a filter or pricey bottled water such as Hydrogen water; it is completely wasteful. People who demand more and more clean water are unaware of severe water pollution in other countries. They prioritize their demand for cleaner water, looking for better, healthier water constantly. We postulate that Japanese's luxurious but wasteful expenditure on water is due to their low awareness towards water pollution and water shortage worldwide. Extremely small number of people is aware of the water issues and solution; even amongst the ones with awareness, few move their thoughts into action.

Thus, we aim to analyze and research ways in which our community can contribute to the decrease our lavish use of money regarding water problems by education. Preventing the society from squandering the money allows Japan to invest in 27 million people suffering from water shortage. We hope our research will contribute to Japan actively solving the global water issues and spur other countries too.

Key Words

Bottled Water, Tap Water, Filter, Water Shortage, Water Supply

Method of the research

The research held with respect to numerous pieces of previous academic research exist regarding the use of reusable water bottle among not only students of ICUHS in specific, but also for other students out side of school in Japan and other places of the world. As such, the proposed research took the form of a new research but on an existing research subject. Inductive approach was used to follow the purposes of this research.

In order to satisfy the objectives of our research, a qualitative research was held. Although it is mostly appropriate for small samples, it has the advantage of offering a complete description and analysis of a research project. One must be aware that the results of qualitative research are not perceived as reflecting the opinions of a wider population.

In depth interview was also used to identify participant's emotions and opinions regarding this subject. It allows having a personal and direct contact between interviewers and interviewees and eliminating non-response rates. Researchers have worked toward creating and maintaining a climate of comfort.

The purpose of this research

In 2015, the Japanese water penetration rate has reached 97.9% and non-water supply district is almost 0. Beginning with the state counter measuring water-borne diseases, the country has improved on developments of water purification technology and strict controls on prevention of water pollution. Moreover, researchers have found that drinking bottled water will result in 1000 times of emissions of green gas, concluding that in a country like Japan where the population is offered with high-quality water, a direct drink is propelled. Despite these efforts, however, around 30% of the Japanese buy mineral water solely to drink.

The main goal of this research is to collect a substantial data set for analysis in order to determine bottled water and reusable water bottle behavior on the International Christian University of High School and use this information to better promote the use of tap water over the bottled water. Through this study, we will determine the effect of social norms on water bottle behavior and create a recommendation to students for reducing the use of disposable bottled water and increasing in the number of reusable water bottles. We sought to learn the reasons behind the particular behavior through interviewing students who drink disposable bottled water. Subsequent analysis of surveys and qualitative data contributed important aspects to our objectives.

Results of the experiment / research

1. Evaluation on ourselves

a. Education on Water within our community

Koganei (小金井)-shi comes from the word gold (金), meaning, "there is a spring that worth of gold". From an early age, Koganei-shi is not only recognized for its enriched water source but is also known for having the highest number of a dry well in the world. Although it has been said that 70% of the water in Koganei-shi comes from deeply seated groundwater, the research by the city in 2013 shows that the ratio of groundwater is only 30%. This is due to the restoration of waterworks in Jyosuiminami, aging degradation of a pump, and simply, the shortage of groundwater from rapid urbanization. Based on this history, students from local schools do research on the environment of the river (Nogawa River), including the quality of water and surrounding species.

Use of reusable water bottles at our school

Use reusable water bottle everyday	29.5%
Buy water bottle every day	46%
Drink from water fountain	5.7%
Other	22.7%

Figure 1: Bottles of beverage sold at our school

Why bottled water?

- Convenient
- Better taste
- Safer
- Not satisfied with the aesthetic qualities (taste, odor, color…) of tap water
- Don’t want to carry around with themselves

2. Public awareness

Figure 1. Degree of Concern about the Environment (by age and gender)

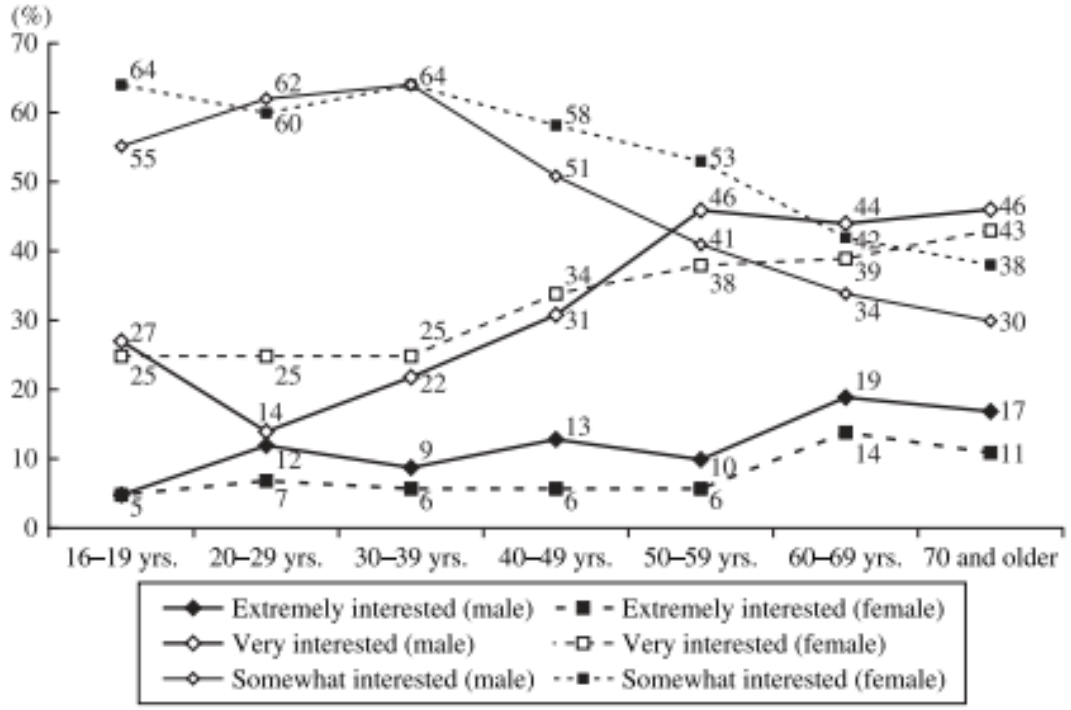

Figure 2: Degree of Concern about the Environment
Source: http://cgi2.nhk.or.jp/bunken/english/reports/pdf/09_no7_08.pdf

Figure 5. Degree of Concern about Environmental Pollution (by age and gender)

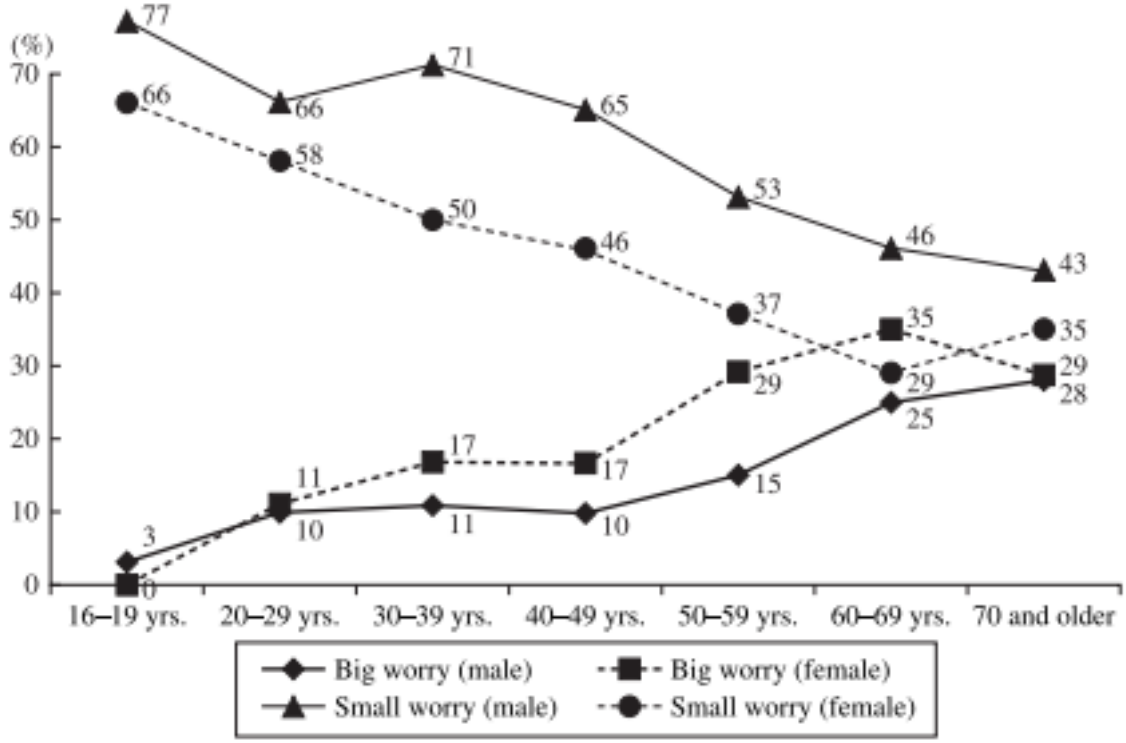

Figure 5: Degree of Concern about Environmental Pollution
Source:http://cgi2.nhk.or.jp/bunken/english/reports/pdf/09_no7_08.pdf

In 2008, NHK conducted a survey of attitudes toward environment to assess Japanese's thoughts and behavior toward the environment.
As shown above, it is evident that Japanese are highly interested in environmental issues; 10 percent of respondents answered “extremely interested,” 34 percent “very interested,” and 50 percent, the highest figure, “somewhat interested.” Those “not very interested” make up only 3 percent, and those who “couldn’t choose” 1 percent. Furthermore, when asked if they think they have more consideration for the environment than others, 60 percent agreed and 17 percent disagreed, meaning there is far more people who think they consider the environment more than others do. By age and gender, the older people get the more they tend to “agree,” and about 70 percent of those in their 50s and 60s “agreed”. A comparison by age and gender shows that the largest percentage of “cooperative” persons was among women in their 60s (47 percent), the largest percentage of “passively resistant” persons was among women in their 20s (43 percent), and the largest percentage of “resistant” persons was among men in their 20s (21 percent). From the data above, we can clearly sense that the young tend to be more "resistant" to care for the environment. This implies the strong need for the environmental education amongst the young. As for the question, “How willing would you be to accept cuts in your standard of living in order to protect the environment?” as few as 3 percent said “very willing,” while 37 percent said “fairly willing,” 25 percent “fairly unwilling,” and 12 percent “very unwilling.” The reason behind the low percentage indicating Japanese's willingness to sacrifice their living for environment protection is the group-orient minded characteristic. They've answered that despite the personal efforts made, nothing changes unless everyone is striving to make a difference. When asked what is necessary to solve environmental problems, 26 percent each answered “education concerning environmental issues” and “effort of individuals,” and 18 percent said “creation and improvement of laws”. Therefore, through this data, we conclude that education concerning environmental issues is necessary to put more emphasis on imminent action required to preserve the nature. Education is typically more effective in Japan as it motivates the crowd of people through their collective consciousness and responsibility of sharing burden together.

3. Bottled water and tap water in terms of cost

Tap water cost only about 0.24 yen per liter, meaning that when we buy bottled water, we are paying 416 times what that amount of water is worth. This means that when we pay 100 yen to buy a 500ml bottle of water, we could spend the exact same amount of our money into the tap water and get 500L. Furthermore, a recent blind taste test conducted by students from Boston University have identified that only a third taste-tester identified the tap water sample correctly, suggesting that tap water is suited for our everyday use.

Recommendation

1. Install reusable water bottle refill stations on campus

We believe that installing refill stations would make using a reusable water bottle more convenient for students. During the interview, we received many comments about the difficulties of filling the water from regular drinking fountains. We suggest that not only our school, but also our community install more refill stations for the use of reusable water bottles. We also suggest that after the stations are installed, those will be a stopping point during the campus tour. Orientation leaders shall discuss how using reusable bottles is a part of our school’s initiative.

Figure 2: Picture of the water bottle refill
Source: http://www.ntid.rit.edu/sites/default/files/imagecache/newsphoto_big/hydration.jpg

2. Incorporate water bottle education into science class

Sample Class 1: "Discover the Chlorine within our drinking water"

Tasty water is mainly defined by the quality of water source and the amount of chlorine used for disinfection. Water chlorination, a method widely practiced by developed nations, works by killing certain pathogens in tap water. By figuring out by our hands how much of Chlorine is in a everyday drinking water, and the way to extract Chlorine, we seek to enrich our understanding of water.

Procedure

1. Background research on what Chlorine is
2. Experiment with purified, regular tap water, and water bottles
   -DPD Colorimetric Method
3. Explore on how might Chlorine be extracted
   Boil
   Lemon
   Charcoal

Sample Class 2: “How tasty is our water?”

Established by the Ministry of Health, Labor, and Welfare in June of 1984, the Oishii Mizu Kenkyukai researches on the current state of Japanese water and its background in order to define the criteria for a tasty water. These criteria include

1. Residue on evaporation to be 30-200 mg/L
2. Solidity of water to be 10-100 mg/L
3. Free carbonate to be 3-30 mg/L
4. Consumption of Potassium Permanganate to be less than or equal to 3 mg/L
5. Odor intensity index less than or equal to 3
6. Residual Chlorine to be less than or equal to 0.4 mg/L
7. Water Temperature to be at the less than 20°C

Procedure

1. Background research on how to play each experiment
2. Experiment with purified, regular tap water, and water bottles
3. Explore on how might some substances be extracted

3. Encourage the school to distribute cheap water bottles with logos

According to our research, distribution of water bottle would be an effective approach in encouraging reusable water bottle use. Therefore, we suggest that the department will distribute or sell at low cost the water bottles to students and teachers. We also received how having our school logo would further motivate students to buy.

4. Constantly inform water issue emergency

As Japanese media rarely brings up water issues on social media, we have scarce source of information about water crisis around the world. Being less exposed to such issues, we are more prone to get less sense of emergency toward water issues. Officials should work toward lessening the discrepancy of general water information around the world and that of Japan. Public advertising should be more utilized in spreading the information and knowledge. If people sense more of such imminent water issues, they certainly will be encouraged to donate, volunteer, or do whatever they can do to help the world.

5. Problematize the economy crisis of water

Why do so many people buy so many plastic bottles every day when they can easily access clean tap water for free? It is probably because of their low awareness of water purity but also because they don't know what's happening around the world dealing with economy crisis of water. Although majority of people do recognize the fact that there are some regions around the world where water is contaminated, extremely few people are aware of the fact that time spent gathering water accounts for billions in lost economic opportunities. 260 billions are lost globally each year due to lack of basic water and sanitation. About 32 billions can be saved in health care costs if there was universal access to basic water and sanitation. As extremely few people can associate economic crisis with worldly water issues, most population are unaware of such problems. As so, they keep wasting their money buying meaningless plastic bottles just to feel safe. These economy crises of water should be regarded as a huge problem around the world by government, medias, and teachers so that people can stop wasting their extravagant expenditure on plastic bottles. If informed, they might be willing to donate to universal organizations to build water sanitation system around the world.

6. Secure and inform the safety of tap water

The main reason people buy bottled water instead of tap water is their unceasing sense of unsafely. Water enterprises and the official government should work toward citizen's feeling of safety drinking tap water without any sanitation system constructed. Although some might claim that tap water is not as tasty as bottled water, it is clearly verified by the officials that Japanese tap water is potable. Surprisingly, the tap water can be safer than bottled water. Japanese government has set an extremely hard evaluation standard for tap water companies even stricter than that of bottled water. These facts are not widely known by many people around Japan and the central government should inform this to all citizens. They should also strengthen the secureness of tap water safety even more than now by frequently cleansing water pipe in case anything has gone wrong. These efforts of officials are crucial in making people feel safe drinking tap water without any sanitation system attached.

Conclusion

According to our research projects, we have discovered that although many are educated of such subjects as water pollution, they are unaware of the difference in various types of water. This unawareness leads to the heavy consumption of bottled beverage. Increasing awareness and understanding of water conservation among students and community is necessary. We hope that our research and recommendations will help promote more sustainable behavior on our community.

Acknowledgements

We would like to thank all the participants for sharing their ideas with us during the interview. We would like to thank teachers and parents for their comments on an earlier version of the manuscript, although any errors are our own and should not tarnish the reputation of these esteemed persons.

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